DERWENT-ACC-NO: 2001-220811

DERWENT-WEEK: 200510

TITLE: Cell culture container for use in laboratory, has **grid** on one or both sides of glass plate fixed to bottom of trunk, for positioning the cell

PATENT-ASSIGNEE: IWAKI GLASS CO LTD[IWAKN]

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BASIC-ABSTRACT:

NOVELTY - Cell culture container includes a trunk (12) which is closed by a lid (31). A glass plate (17) is fixed to bottom (15) of the trunk, for making the cell adhere to the bottom. A **grid** (19) is fixed to either or one side of the glass plate, to position the cell.

DETAILED DESCRIPTION - The bottom of trunk is made of synthetic resin. A hole in bottom (penetrating pore (16)), through which the cell is penetrated, is fully shielded by the glass plate. The thickness of glass plate is 0.04-1.5 mm. A coating of extracellular substrate or polycation is given to the surface of glass plate.

USE - For cell culture during experiment, research in laboratory.

ADVANTAGE - Since glass plate is fixed to bottom of trunk, an indepth view of the cell is obtained when viewing through microscope. Improves accuracy of work by use of **grid** on glass plate to position the cell.

DESCRIPTION OF DRAWING(S) - The figure shows the perspective view of culture container.

Trunk 12

Bottom of trunk 15

Penetrating pore 16

Glass plate 17

Grid 19

Lid 31

CHOSEN-DRAWING: Dwg.1/5

DERWENT-CLASS: D16

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(71)出願人　000158208
旭テクノグラス株式会社
千葉県船橋市行田一丁目50番１号
(72)発明者　伊藤　亨
千葉県船橋市行田一丁目50番１号　旭テクノグラス株式会社内
(74)代理人　100086449
弁理士　熊谷　浩明

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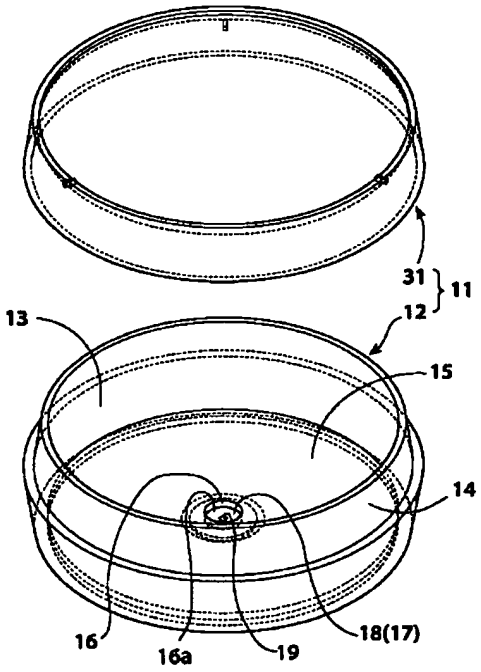
(54)【発明の名称】　培養容器

(57)【要約】
【課題】被培養物の位置特定と、生きたままでの高倍率・高感度の顕微鏡観察とができる。
【解決手段】細胞などの被培養物が収容される容器本体１２と、該容器本体１２を施蓋する蓋体３１とからなる培養容器１１において、容器本体１２は、底部１５に被培養物を付着させるための板状ガラス部１７を備え、該板状ガラス部１７の表裏いずれかの面には、被培養物の所定部位の位置の特定を可能にすべくグリッド座標１９を設けた。



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【特許請求の範囲】

【請求項1】　細胞や組織片などからなる被培養物の収容を自在に形成された容器本体と、該容器本体への施蓋を自在に形成された蓋体とからなる培養容器において、前記容器本体は、少なくともその底部に前記被培養物を付着させるための板状ガラス部を備え、該板状ガラス部の表裏いずれかの面には、付着された前記被培養物の所定部位の位置の特定を可能にすべく形成された複数本の緯線と経線とからなるグリッド座標を設けたことを特徴とする培養容器。

【請求項2】　前記容器本体は、合成樹脂材からなる周側部と底部とで画成される内部空間を有して形成され、前記板状ガラス部は、底部の1以上の箇所に穿設された透孔を完全遮蔽するガラス板片により形成したことを特徴とする請求項1記載の培養容器。

【請求項3】　前記容器本体は、1枚のガラス板からなる底部上に囲繞隔壁を立設して仕切られた複数個の隔室を有して形成され、前記板状ガラス部は、各隔室の別に底部に位置する前記ガラス板の個々の区画部により形成したことを特徴とする請求項1記載の培養容器。

【請求項4】　前記板状ガラス部は、その肉厚が0．04～1．50mmであることを特徴とする請求項1ないし3のいずれかに記載の培養容器。

【請求項5】　前記板状ガラス部の表面には、細胞外基質もしくはポリカチオン類が塗布されていることを特徴とする請求項1ないし4のいずれかに記載の培養容器。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】本発明は、実験や研究のために細胞や組織片などを被培養物として培養する際に好適に用いることができる培養容器に関する。

【0002】

【従来の技術】種々の目的から実験室等で広く使用されている実験研究用の培養容器としては、フラスコやペトリ皿のほか、マルチウェルプレートやローラーボトルなど、各種タイプのものがあり、その容器本体内に寒天や所要の液体を入れ、これらを培地として細胞や組織片や細菌などを含む各種の被培養物の培養ができるようになっている。

【0003】しかも、上記培養容器は、合成樹脂材により形成されているのが一般的であり、特に、透明な合成樹脂材であるポリスチレンは、安価であるばかりでなく、生体の細胞や組織片などの付着を容易化させる表面処理作業も円滑に行え、さらには顕微鏡観察に適する平面性の確保も容易であることから頻用されている。

【0004】一方、培養容器内の細胞や組織片などは、より高倍率のもとで顕微鏡観察する必要が生じたり、蛍光観察するに際しより高感度のもとで顕微鏡観察する必要が生じたりする場合がある。しかし、合成樹脂材からなる上記培養容器を用いてかかる要請に応えようとして

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も、平面性を確保しつつ、培養面（底部）の肉厚が1mm以下となるように樹脂成型することが技術的に難しいことから、肉厚が比較的厚くなって顕微鏡の焦点深度がとれなくなるばかりでなく、バックグラウンドとして材質に由来する蛍光（自己蛍光）が出て、所望する高倍率・高感度のもとで顕微鏡観察ができなくなってしまう不都合があった。

【0005】ところで、上記不都合を解消する技術としては、合成樹脂材と比較して平面性を確保しながらより薄い肉厚に成型できるほか、透過性が高く、低蛍光でもあるガラス材を用いる手法がある。具体的には、例えばスライドガラスやカバーガラス、カバースリップと称される板状ガラスを用い、該板状ガラスの表面上で細胞や組織片などを培養する手法である。

【0006】一方、容器本体の側壁部と、該容器本体の開口部に覆設される蓋部とを合成樹脂材で形成し、容器本体の底部のみがスライドガラスにより形成されているチャンバースライドと称される培養容器もある。

【0007】さらに、上記したポリスチレン製の培養容器、特にペトリ皿の底部に1個の透孔を設け、該透孔を下面側から塞いだ状態で接着したカバーガラスを配置してなるガラスベースディッシュやガラスボトムカルチャーディッシュと称されているガラス底面タイプの培養容器も市販されている。そして、このようなガラス底面タイプの培養容器を用いることにより、合成樹脂材からなる培養容器にみられ「所望する高倍率・高感度が得られない」という従来手法の不具合を解消することはできる。

【0008】また、培養容器内で培養した細胞や組織片などを顕微鏡で観察する際には、例えばマイクロインジェクションで特定の細胞に遺伝子や薬物を微量注入した後の形態変化を時間をおいて観察したり、細胞の走化性を観察したり、同一容器内で細胞の母集団を個別の亜集団に分けて観察するなど、個々の細胞の位置や一群としての細胞集団などの位置を特定した上で、繰り返して観察する必要のある場合がある。

【0009】このような繰返し観察の要請に対しては、位置の特定ができるようにし文字数字式座標を表示した合成樹脂製の培養容器（フラスコ）も既に提案されており（例えば、第2683732号特許公報）、該培養容器（フラスコ）を用いることにより培養状態のもとでの観察対象物の特定位置に対する顕微鏡による繰返し観察ができるようになっている。

【0010】

【発明が解決しようとする課題】しかし、文字数字式座標を表示した上記培養容器を用いる場合には、材質が合成樹脂材であるが故に焦点深度がとれず高倍率で観察できないほか、自己蛍光の問題も依然として残されており、さらには、成型技術上の問題もあって個々の細胞の位置を特定できる程度に微細化された文字数字式座標を

表示できない不都合もあった。

【0011】一方、円形カバーガラスのなかには、グリッドと称されている微細化された座標が刻入されたものもすでに市販されている。これは、該円形カバーガラスの素材がガラスであるが故に、合成樹脂材の場合における既述の欠点を解消できるばかりではなく、レーザーやエッチングなどの精緻な加工技術を適用して微細なグリッドを容易に形成できることに由来する。

【0012】しかし、該円形カバーガラスは、あくまでも液体培地を入れた合成樹脂製の培養容器内に別体として浸しながらその表面で細胞などを培養するために用いられるものである。したがって、該円形カバーガラス上の細胞などを顕微鏡で観察する際には、合成樹脂製の培養容器内の液体培地中に浸した状態のもとで一応の観察はできるものの、合成樹脂材という材質に由来する既述の欠点は依然として解消できていない。また、より高倍率、高感度で観察する必要がある場合には、円形カバーガラスを培養容器内から取り出し、スライドガラス上に定置させた上で顕微鏡による観察を行う必要があるので、作業的に煩雑であるばかりでなく、液体培地から外へ取り出すことにより、生きたままの培養状態で顕微鏡観察ができなくなってしまうという問題もあった。

【0013】本発明は従来技術にみられた上記課題に鑑み、細胞や組織片などを被培養物として培養する際、該被培養物の所定部位を容易に位置特定できるばかりでなく、生きたままの培養状態を高倍率・高感度のもとで顕微鏡観察ができるようにした培養容器を提供することにその目的がある。

【0014】

【課題を解決するための手段】本発明は上記目的を達成すべくなされたものであり、その構成上の特徴は、細胞や組織片などからなる被培養物の収容を自在に形成された容器本体と、該容器本体への施蓋を自在に形成された蓋体とからなる培養容器において、前記容器本体は、少なくともその底部に前記被培養物を付着させるための板状ガラス部を備え、該板状ガラス部の表裏いずれかの面には、付着された前記被培養物の所定部位の位置の特定を可能にすべく形成された複数本の緯線と経線とからなるグリッド座標を設けたことにある。

【0015】この場合、前記容器本体は、合成樹脂材からなる周側部と底部とで画成される内部空間を有して形成され、前記板状ガラス部は、底部の１以上の箇所に穿設された透孔を完全遮蔽する透明なガラス板片により形成することができる。また、前記容器本体は、１枚のガラス板からなる底部上に囲繞隔壁を立設して仕切られた複数個の隔室を有して形成し、前記板状ガラス部は、各隔室の別に底部に位置する前記ガラス板の個々の区画部により形成するものであってもよい。

【0016】しかも、前記板状ガラス部は、その肉厚が薄すぎると壊れやすく、厚過ぎると顕微鏡観察において焦点深度がとれないことから、０．０４～１．５０mmの肉厚とするのが好ましく、また、該板状ガラス部の表面には、細胞や組織片などを培養する際の付着性を高めるために、細胞外基質もしくはポリカチオン類を塗布しておくのが望ましい。

【0017】

【発明の実施の形態】図１は、本発明に係る培養容器をペトリ皿に適用した場合の一例を開蓋状態のもとで示す全体斜視図であり、図２は、図１の中央縦断面図である。

【0018】これら両図によれば、培養容器１１は、その底部１５に細胞や組織片などからなる適宜の被培養物（図示せず）を付着させるための透明な板状ガラス部１７を有してなる容器本体１２と、該容器本体１２への施蓋を自在に形成された蓋体３１とで構成されている。

【0019】この場合、例えば高さが１０mmで直径が３５mmである円筒状の容器本体１２は、ポリスチレンなどの合成樹脂材からなる周側部１４と底部１５とで画成された内部空間１３を有して形成されており、底部１５の中心部位には、例えば直径が８mm程度の円形を呈する透孔１６が１個穿設されている。

【0020】しかも、底部１５には、下面１５ａ側から透孔１６の開口面１６ａを完全に覆うに足る外径、例えば直径が１２mm程度の円形を呈し、かつ、その肉厚が０．１７mm程度の透明なガラス板片１８がシリコン系接着剤やアクリレート系接着剤などからなる接着剤Ｓを介して接合されており、該ガラス板片１８により透孔１６の開口面１６ａの全体が遮蔽されている。なお、透孔１６は、図３に示すように底部１５の２か所に穿設したり、図示しない3か所以上に穿設することができ、この場合、各透孔１６は、個々のガラス板片１８により各別に遮蔽されたり、図示は省略してあるが透孔のすべてを連続する１枚のガラス板片で同時に遮蔽されることになる。また、透孔１６と、これを塞ぐガラス板片１８と具体的な形状は、図示例に限らず、適宜採用することができる。なお、図１と図２においては、ガラス板片１８を下面１５ａ側から接合されている例が示されているが、必要により上面１５ｂ側からガラス板片１８を接合することもできる。

【0021】また、板状ガラス部１７（ガラス板片１８）の表面１８ａには、付着された細胞などの被培養物の所定部位の位置の特定を可能にすべく、レーザーやエッチングで刻入するなど、適宜の手法により形成された複数本の微細な緯線１９ａと経線１９ｂとからなるグリッド座標１９が設けられている。なお、グリッド座標１９は、必要により板状ガラス部１７（ガラス板片１８）の裏面１８ｂに形成することもできる。

【0022】図６と図７とは、板状ガラス部１７（ガラス板片１８）の表面１８ａに設けられているグリッド座標１９を拡大してパターン別に例示したものである。こ

のうち、図6は、例えば一群の細胞集団である母集団を個別の亜集団に分けて観察する際に好適な緯線１９ａと経線１９ｂと刻入してなるグリッド座標１９のパターン例を示す。また、図7は、例えば個々の細胞の位置や細胞群の位置を特定しようとする際に好適な緯線１９ａと経線１９ｂと刻入してなるグリッド座標１９のパターン例を示す。なお、上記したグリッド座標１９のパターン例は、あくまでも代表例であり、被培養物の所定部位の位置の特定ができるものであれば、上記パターン例以外にも研究目的等との関係で定まる各種の配置様式のものを所望に応じ適宜採用することができる。

【００２３】図4は、本発明に係る培養容器１１の他例について容器本体２２の側のみを示す平面図であり、図5は、図4におけるＡ－Ａ線矢視方向での縦断面図である。これら両図によれば、該容器本体２２は、１枚の透明なガラス板２８からなる底部２５上にポリスチレンなどの合成樹脂材からなる囲繞隔壁２４を立設して仕切られた複数個の隔室２３を有して形成されている。

【００２４】この場合における板状ガラス部２７は、各隔室２４の別に底部２５に位置するガラス板２８の個々の区画部２９により形成されることになる。なお、図中の符号３０は、隣り合う囲繞隔壁２４，２４相互間に介在させた補強リブを示す。また、個々の区画部２９（板状ガラス部２７）に形成されるグリッド座標１９のパターンは、既に述べたものと同様にして採用することができるので、その説明は省略する。

【００２５】なお、本発明における透明な板状ガラス部は、薄すぎると壊れやすく加工上問題があり、厚過ぎると、顕微鏡観察において焦点深度がとれず、ガラスの利点がなくなってしまうため、肉厚が０．０４～１．５０ｍｍのものを採用するのが望ましい。また、より高倍率、高感度での顕微鏡観察を可能とする観点からは、より透過率が高く、かつ、より低蛍光な特性を示す板状ガラス部を用いるのが望ましい。

【００２６】さらに、細胞や組織片などの被培養物を培養する際、培養面への被培養物の付着性を高める観点からは、例えばコラーゲン、ラミニン、フィブロネクチン等の細胞外基質や、例えばポリリジン、ポリエチレンイミン、ポリオルチニン等のポリカチオン類を板状ガラス部の表面に事前に塗布しておくのが好ましい。

【００２７】次に、本発明に係る培養容器１１の作用を図1と図2とに示した例に基づき説明すれば、開蓋状態にある容器本体１２の板状ガラス部１７の表面１８ａに細胞や組織片などの被培養物を付着した後、蓋体３１を施蓋して適宜の培養環境のもとにおくことにより、被培養物を培養することができる。

【００２８】しかも、培養容器１１内の細胞や組織片などの被培養物をより高倍率のもとで顕微鏡観察する必要が生じたり、蛍光観察するに際しより高感度のもとで顕微鏡観察する必要が生じた場合であっても、板状ガラス部１７自体の肉厚が０．０４～１．５０ｍｍであれば顕微鏡の焦点深度がとれるばかりでなく、透過率が高く、かつ、低蛍光な特性を得ることができるので、十分に対応させることができる。

【００２９】また、板状ガラス部１７（ガラス板片１８）の表面１８ａもしくは裏面１８ｂには、複数本の緯線１９ａと経線１９ｂとからなるグリッド座標１９が設けられているので、例えばマイクロインジェクションで特定の細胞に遺伝子や薬物を微量注入した後の形態変化を時間をおいて観察したり、細胞の走化性を観察したり、同一容器内で細胞の母集団を個別の亜集団に分けて観察するというような繰返し観察の必要が生じても、個々の細胞の位置や一群としての細胞集団などの位置を特定した上で、その都度、正確に顕微鏡観察をすることができる。しかも、細胞や組織片などの被培養物は、培地から外へ取り出すなどというような煩雑な準備作業を要することなく、生きたままの培養状態のもとで顕微鏡観察ができる。なお、グリッド座標１９が板状ガラス部１７の裏面１８ｂに設けられている場合には、例えば顕微鏡写真撮影を行う際などに、事前にグリッド座標１９の位置を確認した後、グリッド座標１９が見えない状態で撮影できることになる。

【００３０】さらに、図3に示す容器本体１１を用いる場合には、同一の培養容器１１内の複数箇所にて細胞や組織片などの被培養物を培養できるほか、図１に示す容器本体１２と同じ環境のもとで高倍率、高感度な顕微鏡観察を繰り返して行うことができる。なお、図4と図5とに示す容器本体２２を用いる場合においても、ガラス板２８の区画部２９からなる板状ガラス部２７を利用して上記したと同様に高倍率、高感度な顕微鏡観察を繰り返して行うことができる。

【００３１】

【発明の効果】以上述べたように本発明によれば、容器本体の板状ガラス部に付着させて培養している細胞や組織片などの被培養物を、より高倍率、高感度のもとで顕微鏡観察する必要が生じた場合であっても、顕微鏡の焦点深度をとることができ、さらには透過率が高く、かつ、低蛍光な特性をも得ることができるので、十分に対応させることができる。

【００３２】また、板状ガラス部には、複数本の緯線と経線とからなるグリッド座標が設けられているので、培養中の細胞や組織片などの被培養物に対し繰返し観察の必要が生じても、個々の細胞の位置や一群としての細胞集団などの位置を特定した上で、その都度、正確に顕微鏡観察をすることができ、実験・研究精度の向上に大きく寄与させることができる。しかも、細胞や組織片などの被培養物は、煩雑な準備作業を要することなく、生きたままの培養状態のもとで顕微鏡観察ができる。

【００３３】さらに、板状ガラス部に細胞外基質やポリカチオン類が塗布されている場合には、培養面への細胞

や組織片などの被培養物の付着性を高めることができる。

【図面の簡単な説明】

【図1】本発明の一例を開蓋状態のもとで拡大して示す全体斜視図。

【図2】図1の中央縦断面図。

【図3】図1の変形例を示す中央縦断面図。

【図4】本発明の他例について容器本体の側のみを示す平面図。

【図5】図4におけるA－A線矢視方向での縦断面図。

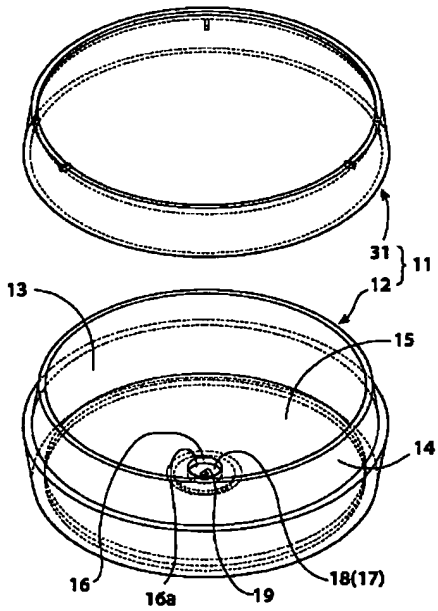
【図6】グリッド座標の一例を拡大して示す平面図。

【図7】グリッド座標の他例を拡大して示す平面図。

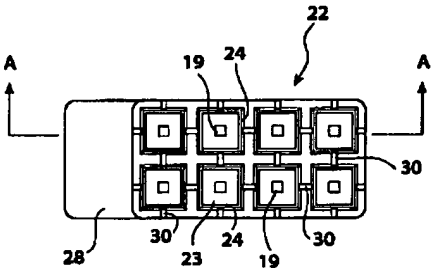
【符号の説明】

11　培養容器
12　容器本体
13　内部空間
14　周側部
15　底部
15a　下面
15b　上面
16　透孔
16a　開口面
17　板状ガラス部
18　ガラス板片
18a　表面
18b　裏面
19　グリッド座標
19a　緯線
19b　経線
22　容器本体
23　隔室
24　囲繞隔壁
25　底部
27　板状ガラス部
28　ガラス板
29　区画部
30　補強リブ
31　蓋体
S　接着剤

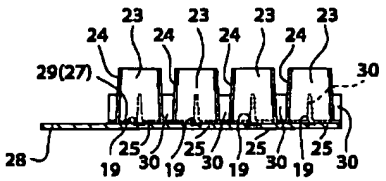
【図1】



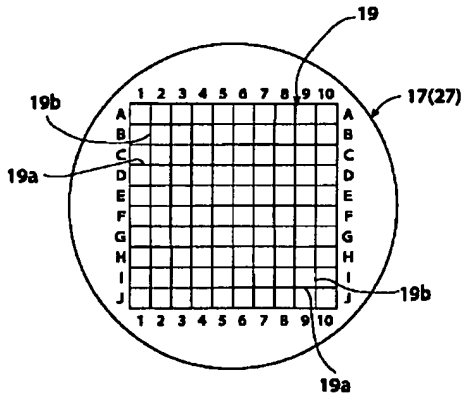
【図4】



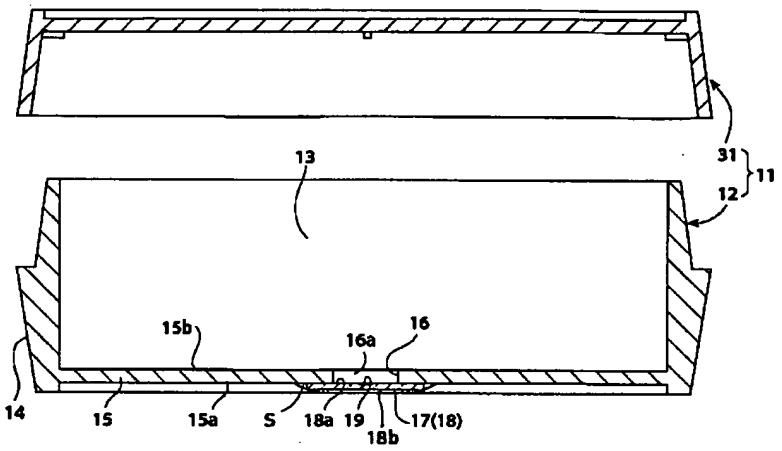
【図5】



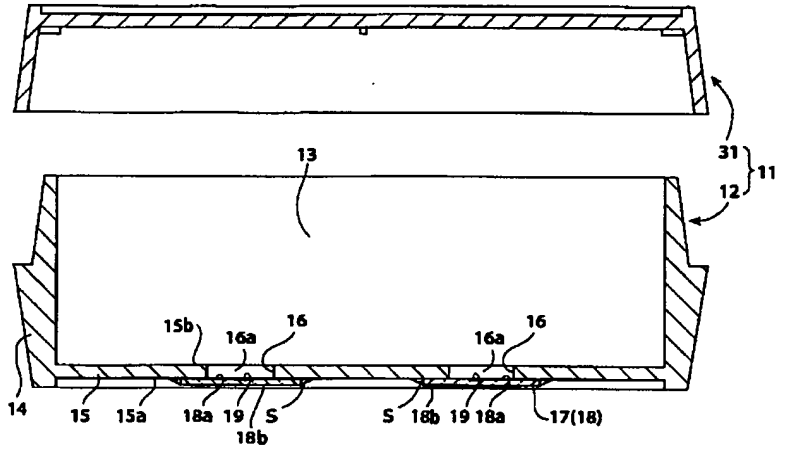
【図6】



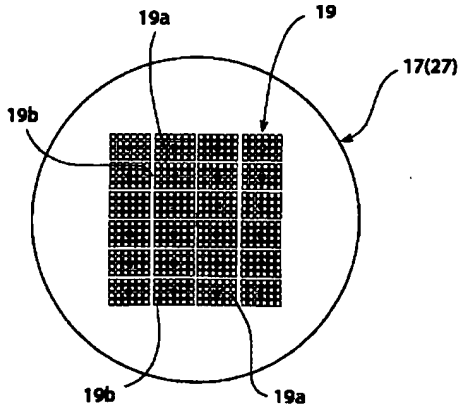
【図2】


31
11
12
13
15b
16a
16
14
15
15a
S
18a
19
18b
17(18)

【図3】


31
11
12
13
15b
16a
16
16a
16
14
15
15a
18a
19
S
18b
S
18b
19
18a
17(18)

【図7】


19a
19
17(27)
19b
19b
19a

フロントページの続き

(51)Int.Cl.[7]	識別記号	FI		テーマコード(参考)
C12N 5/10		C12N 5/00	A	
5/00			D	

* NOTICES *

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention] In case this invention cultivates a cell, an explant, etc. as a culture-ed for an experiment or research, it relates to the culture container which can be used suitably.
[0002]
[Description of the Prior Art] As a culture container for experiment research currently widely used from the various purposes in the laboratory etc., there is a thing of various types, such as a flask, a multi-well plate besides a Petri dish, and a roller bottle, an agar and a necessary liquid are put in in the body of a container, and it has come to be able to perform culture of various kinds of cultures-ed which contain a cell, an explant, bacteria, etc. by making these into a culture medium.
[0003] And as for the above-mentioned culture container, being formed of synthetic-resin material is common and especially the polystyrene that is transparent synthetic-resin material is not only cheap, but the object for ** also of the surface treatment activity which makes adhesion of a living body's cell, an explant, etc. easy-ize, and the reservation of smoothness which can carry out smoothly and is further suitable for microscope observation is carried out from the easy thing.
[0004] On the other hand, a cell, an explant, etc. in a culture container may need to carry out microscope observation under a high scale factor, or will be faced carrying out fluorescence observation and may need to carry out microscope observation under high sensitivity more. However, even if it is going to respond to this request using the above-mentioned culture container which consists of synthetic-resin material Carrying out resin molding, securing smoothness, so that the thickness of a culture side (pars basilaris ossis occipitalis) may be set to 1mm or less from a technically difficult thing There was un-arranging [the fluorescence (autofluorescence) which thickness becomes comparatively thick and it not only becoming impossible to take the depth of focus of a microscope but originates in the quality of the material as a bag ground comes out, and microscope observation becomes impossible by the basis of the high scale factor and high sensitivity for which it asks].
[0005] By the way, there is technique using the thinner glass material which it can cast thickly, and also permeability is high, and is also hypofluorescence, securing smoothness as a technique which cancels above-mentioned un-arranging as compared with synthetic-resin material. It is the technique of specifically cultivating a cell, an explant, etc. on the front face of this tabular glass using slide glass, cover glass, and the tabular glass called a cover slip.
[0006] There is also a culture container called the chamber slide by which the side-attachment-wall section of the body of a container and the covering device with which opening of this body of a container is covered are formed by synthetic-resin material on the other hand, and only the pars basilaris ossis occipitalis of the body of a container is formed with slide glass.
[0007] Furthermore, one bore is prepared in the above-mentioned culture container made from polystyrene, especially the pars basilaris ossis occipitalis of a Petri dish, and the culture container of the glass base type called the glass base dish and glass bottom culture dish which were pasted up where this bore is closed from an inferior-surface-of-tongue side, and which come to arrange cover glass is also

marketed. And by using a such glass base type culture container, the culture container which consists of synthetic-resin material sees, and the fault of the conventional technique "the high scale factor and high sensitivity for which it asks are not obtained" can be canceled.
[0008] moreover, in case a cell, an explant, etc. which were cultivated within the culture container are observed under a microscope for example, set time amount, and observe the gestalt change after carrying out microinject of a gene or the drug to a specific cell with a microinjection, or The chemotaxis of a cell is observed, or within the same container, the population of a cell is divided into the subset according to individual, and the need of observing repeatedly after pinpointing locations, such as a location of each cell and a cell population as a group, may have observed it.
[0009] The culture container made of synthetic resin (flask) which it could be made to perform pinpointing of a location and displayed the alphanumeric coordinate has also already been proposed (for example, No. [2683732] patent official report), and it has come to be able to perform repetition observation under the microscope to the specific location of the observation object under a culture condition by using this culture container (flask) to the request of such repetition observation.
[0010]
[Problem(s) to be Solved by the Invention] However, when the above-mentioned culture container which displayed the alphanumeric coordinate was used, although the quality of the material was synthetic-resin material therefore, the depth of focus could not be taken and it could not observe for a high scale factor, and also the problem of autofluorescence is also still left behind and there was un-arranging [which cannot display the alphanumeric coordinate made detailed by extent which the problem on a molding technique also has and can pinpoint the location of each cell further].
[0011] On the other hand, in circular cover glass, that to which ** ON of the coordinate which is called the grid, and which was made detailed was carried out is also already marketed. This originates in the ability to form a detailed grid easily with the application of minute processing techniques, such as laser and etching, for the fault of the previous statement in the case of synthetic-resin material to to be not only cancelable, but, although the material of this circular cover glass is glass therefore.
[0012] However, this circular cover glass is used in order to cultivate a cell etc. on the front face, dipping as another object in the culture container of the product made of synthetic resin which put in the liquid medium to the last. Therefore, although observation temporary at the basis in the condition of having dipped into the liquid medium in the culture container made of synthetic resin can be performed in case the cell on this circular cover glass etc. is observed under a microscope, the fault of previous statement originating in the quality of the material of synthetic-resin material is not still cancelable. Moreover, since observation under a microscope needed to be performed after taking out circular cover glass from the inside of a culture container and making it fix on slide glass when it was necessary to observe by the high scale factor and high sensitivity more, it is not only complicated in activity, but there was a problem of microscope observation becoming impossible in the state of culture of having lived by taking out from a liquid medium outside.
[0013] In case this invention cultivates a cell, an explant, etc. as a culture-ed in view of the above-mentioned technical problem seen by the conventional technique, the purpose is in offering the culture container to which it not only can carry out the location specification of the predetermined part of this culture-ed easily, but the having lived culture condition was made to be made under a high scale factor and high sensitivity as for microscope observation.
[0014]
[Means for Solving the Problem] This invention is made that the above-mentioned purpose should be attained. The description on the configuration In the culture container which consists of a body of a container formed free in hold of the culture-ed which consists of a cell, an explant, etc., and a lid formed free in lidding to this body of a container said body of a container It has the tabular glass section for making said culture-ed adhere to the pars basilaris ossis occipitalis at least, and is in having established the grid coordinate which consists of two or more parallels and circles of longitude which were formed in the field of one of the front flesh sides of this tabular glass section that pinpointing of the location of the predetermined part of said culture-ed to which it adhered should be made possible.

[0015] In this case, said body of a container has the building envelope formed at the circumferential flank which consists of synthetic-resin material, and the pars basilaris ossis occipitalis, and is formed, and said tabular glass section can be formed by the transparent piece of a glass plate which carries out full electric shielding of the bore drilled in one or more parts of a pars basilaris ossis occipitalis. Moreover, said body of a container may have and form two or more cells which set up the surrounding septum and were divided on the pars basilaris ossis occipitalis which consists of a glass plate of one sheet, and said tabular glass section may be formed by each partition section of said glass plate located according to each cell at a pars basilaris ossis occipitalis.
[0016] And if it will tend to break if the thickness of said tabular glass section is too thin, and it is too thick, since it cannot take the depth of focus in microscope observation, in order to raise the adhesion at the time of cultivating a cell, an explant, etc., in the front face of this tabular glass section, it is desirable [the section / it is desirable to suppose / 0.04-1.50mm / that it is thick, and] to apply an extracellular matrix or the poly cations.
[0017]
[Embodiment of the Invention] Drawing 1 is the whole perspective view showing an example at the time of applying the culture container concerning this invention to a Petri dish under an opening condition, and drawing 2 is central drawing of longitudinal section of drawing 1 .
[0018] According to both [these] drawings, the culture container 11 consists of a body 12 of a container which comes to have the transparent tabular glass section 17 for making the proper culture-ed (not shown) which becomes the pars basilaris ossis occipitalis 15 from a cell, an explant, etc. adhere, and a lid 31 formed free in lidding to this body 12 of a container.
[0019] The body 12 of a container of the shape of a cylinder whose height is 35mm whose diameter is this case has the building envelope 13 formed at the circumferential flank 14 which consists of synthetic-resin material, such as polystyrene, and the pars basilaris ossis occipitalis 15 by 10mm, it is formed, and one bore 16 which presents the round shape whose diameter is about 8mm is drilled in the core of a pars basilaris ossis occipitalis 15.
[0020] And it is joined to the pars basilaris ossis occipitalis 15 through the adhesives S with which the round shape whose outer diameter which is completely sufficient for a wrap in effective area 16a of a bore 16 from the inferior-surface-of-tongue 15a side, for example, a diameter, is about 12mm is presented, and the transparent piece 18 of a glass plate the thickness of whose is about 0.17mm consists of silicon system adhesives, acrylate system adhesives, etc., and the whole effective area 16a of a bore 16 is covered by this piece 18 of a glass plate. In addition, two places of a pars basilaris ossis occipitalis 15 can be punctured, or a bore 16 can be drilled in three or more places which are not illustrated, as shown in drawing 3 , and although each bore 16 is covered by each ** by each piece 18 of a glass plate or illustration is omitted in this case, it will be covered by coincidence by the piece of a glass plate of one sheet which continues in all the bores. Moreover, a bore 16, the piece 18 of a glass plate which closes this, and a concrete configuration are employable suitably not only in the example of illustration. In addition, in drawing 1 and drawing 2 , although the example joined from the inferior-surface-of-tongue 15a side is shown in the piece 18 of a glass plate, the piece 18 of a glass plate is also joinable from the top-face 15b side as occasion demands.
[0021] Moreover, the grid coordinate 19 which consists of detailed two or more parallel 19a formed of proper technique, such as carrying out ** ON by laser or etching, and circles-of-longitude 19b is formed in surface 18a of the tabular glass section 17 (piece 18 of a glass plate) that pinpointing of the location of the predetermined part of cultures-ed, such as a cell to which it adhered, should be made possible. In addition, the grid coordinate 19 can also be formed in rear-face 18b of the tabular glass section 17 (piece 18 of a glass plate) as occasion demands.
[0022] Drawing 6 and drawing 7 expand the grid coordinate 19 prepared in surface 18a of the tabular glass section 17 (piece 18 of a glass plate), and illustrate it according to a pattern. among these, drawing 6 -- for example, a group -- in case the population which is a cell population is divided into the subset according to individual and observed, the example of a pattern of the grid coordinate 19 which comes to carry out ** ON to suitable parallel 19a and circles-of-longitude 19b is shown. Moreover, drawing 7

shows the example of a pattern of the grid coordinate 19 which comes to carry out ** ON to suitable parallel 19a and circles-of-longitude 19b, in case it is going to pinpoint the location of each cell, and the location of a cell population. In addition, the example of a pattern of the above-mentioned grid coordinate 19 is an example of representation to the last, and if pinpointing of the location of the predetermined part of a culture-ed can be performed, the thing of various kinds of arrangement format which becomes settled in the relation for the purpose of research etc. can be suitably used for it according to a request besides the above-mentioned example of a pattern.

[0023] Drawing 4 is the top view showing only the body 22 side of a container about the other examples of the culture container 11 concerning this invention, and drawing 5 R> 5 is drawing of longitudinal section in the direction of an A-A line view in drawing 4 . According to both [these] drawings, this body 22 of a container has two or more cells 23 which set up the surrounding septum 24 which consists of synthetic-resin material, such as polystyrene, and were divided on the pars basilaris ossis occipitalis 25 which consists of a transparent glass plate 28 of one sheet, and is formed.

[0024] In this case, the tabular glass section 27 which can be set will be formed according to each cell 24 of each partition section 29 of a glass plate 28 located in a pars basilaris ossis occipitalis 25. In addition, the sign 30 in drawing shows the adjacent surrounding septum 24 and the reinforcing rib made to intervene between 24. Moreover, since the pattern of the grid coordinate 19 formed in each partition section 29 (tabular glass section 27) is employable like what was already described, the explanation is omitted.

[0025] In addition, since there is a processing top problem that it will be easy to break if too thin, the depth of focus cannot be taken in microscope observation if too thick, but the advantage of glass is lost, as for the transparent tabular glass section in this invention, it is desirable to adopt that whose thickness is 0.04-1.50mm. Moreover, it is desirable to use the tabular glass section which shows the property, hypofluorescence [permeability / permeability is high and] more, from a viewpoint which enables a high scale factor and microscope observation by high sensitivity more.

[0026] Furthermore, in case cultures-ed, such as a cell and an explant, are cultivated, it is desirable to apply the poly cations, such as extracellular matrices, such as a collagen, a laminin, and fibronectin, and for example, the poly lysine, polyethyleneimine, a polyol thynnine, to the front face of the tabular glass section in advance from a viewpoint which raises the adhesion of the culture-ed to a culture side.

[0027] Next, if it explains based on the example which showed the operation of the culture container 11 concerning this invention to drawing 1 and drawing 2 , after adhering cultures-ed, such as a cell and an explant, to surface 18a of the tabular glass section 17 of the body 12 of a container in an opening condition, a lid 31 can be lidded and a culture-ed can be cultivated by Lycium chinense on the basis of a proper culture environment.

[0028] And even if it is the case where it faced it being necessary to carry out microscope observation of the cultures-ed, such as a cell in the culture container 11, and an explant, under a high scale factor or, and carrying out fluorescence observation, and microscope observation needs to be carried out more under high sensitivity Since it not only can take the depth of focus of a microscope, but the property, hypofluorescence [permeability / permeability is high and], can be acquired if the thickness of tabular glass section 17 the very thing is 0.04-1.50mm, it can be made to fully correspond.

[0029] moreover, to surface 18a of the tabular glass section 17 (piece 18 of a glass plate), or rear-face 18b Since the grid coordinate 19 which consists of two or more parallel 19a and circles-of-longitude 19b is established for example, set time amount, and observe the gestalt change after carrying out microinject of a gene or the drug to a specific cell with a microinjection, or Even if the need for repetition observation of observing the chemotaxis of a cell, or dividing the population of a cell into the subset according to individual, and observing it within the same container arose, after pinpointing locations, such as a location of each cell, and a cell population as a group, microscope observation can be carried out correctly each time. And microscope observation can be performed under a having lived culture condition, without requiring the complicated dead work of taking out cultures-ed, such as a cell and an explant, from a culture medium outside etc. In addition, when the grid coordinate 19 is formed in rear-face 18b of the tabular glass section 17, in case photomicrography is performed, after checking the

location of the grid coordinate 19 in advance, a photograph can be taken in the condition that the grid coordinate 19 is not in sight.

[0030] Furthermore, when using the body 11 of a container shown in drawing 3 , cultures-ed, such as a cell and an explant, can be cultivated by two or more [in the same culture container 11], and also under the same environment as the body 12 of a container shown in drawing 1 , a high scale factor and high sensitivity microscope observation can be repeated, and can be performed. In addition, when using the body 22 of a container shown in drawing 4 and drawing 5 , with having described above using the tabular glass section 27 which consists of the partition section 29 of a glass plate 28, similarly, a high scale factor and high sensitivity microscope observation can be repeated, and can be performed.

[0031]

[Effect of the Invention] Since the depth of focus of a microscope can be taken and permeability can also acquire a hypofluorescence property highly further, it can be made to fully correspond, even if it is the case where microscope observation of the cultures-ed which are made to adhere to the tabular glass section of the body of a container, and are cultivated, such as a cell and an explant, needs to be carried out more under a high scale factor and high sensitivity according to this invention as stated above.

[0032] Moreover, microscope observation can be carried out correctly each time, and it can be made to contribute to improvement in experiment / research precision greatly, after pinpointing locations, such as a location of each cell, and a cell population as a group, even if the need for repetition observation arose to cultures-ed, such as a cell under culture, and an explant, since the grid coordinate which consists of two or more parallels and circles of longitude was prepared in the tabular glass section. And cultures-ed, such as a cell and an explant, can perform microscope observation under a having lived culture condition, without requiring a complicated dead work.

[0033] Furthermore, when an extracellular matrix and the poly cations are applied to the tabular glass section, the adhesion of cultures-ed, such as a cell to a culture side and an explant, can be raised.

[Translation done.]

* NOTICES *

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

CLAIMS

[Claim(s)]
[Claim 1] In the culture container which consists of a body of a container formed free in hold of the culture-ed which consists of a cell, an explant, etc., and a lid formed free in lidding to this body of a container said body of a container It has the tabular glass section for making said culture-ed adhere to the pars basilaris ossis occipitalis at least. In the field of one of the front flesh sides of this tabular glass section The culture container characterized by establishing the grid coordinate which consists of two or more parallels and circles of longitude which were formed that pinpointing of the location of the predetermined part of said culture-ed to which it adhered should be made possible.
[Claim 2] It is the culture container according to claim 1 characterized by for said body of a container having the building envelope formed at the circumferential flank which consists of synthetic-resin material, and the pars basilaris ossis occipitalis, having formed it, and forming said tabular glass section by the piece of a glass plate which carries out full electric shielding of the bore drilled in one or more parts of a pars basilaris ossis occipitalis.
[Claim 3] It is the culture container according to claim 1 characterized by for said body of a container having two or more cells which set up the surrounding septum and were divided on the pars basilaris ossis occipitalis which consists of a glass plate of one sheet, having formed it, and forming said tabular glass section by each partition section of said glass plate located according to each cell at a pars basilaris ossis occipitalis.
[Claim 4] Said tabular glass section is a culture container according to claim 1 to 3 characterized by the thickness being 0.04-1.50mm.
[Claim 5] The culture container according to claim 1 to 4 characterized by applying an extracellular matrix or the poly cations to the front face of said tabular glass section.

[Translation done.]